

No. 620,054.

Patented Feb. 21, 1899.

C. A. ROBBINS.
PACKING BOX.

(Application filed Nov. 11, 1898.)

(No Model.)

FIG 1

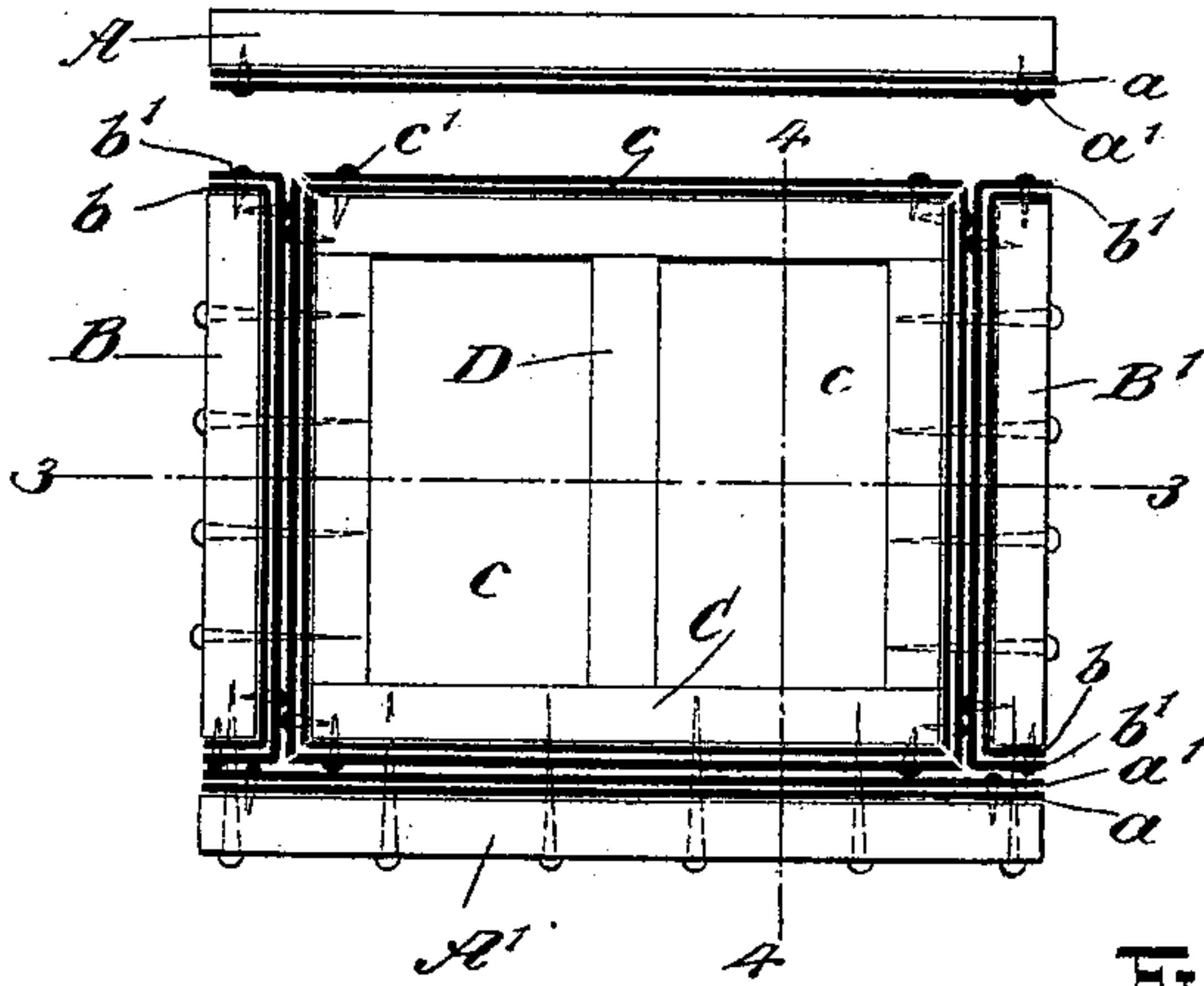


FIG 2

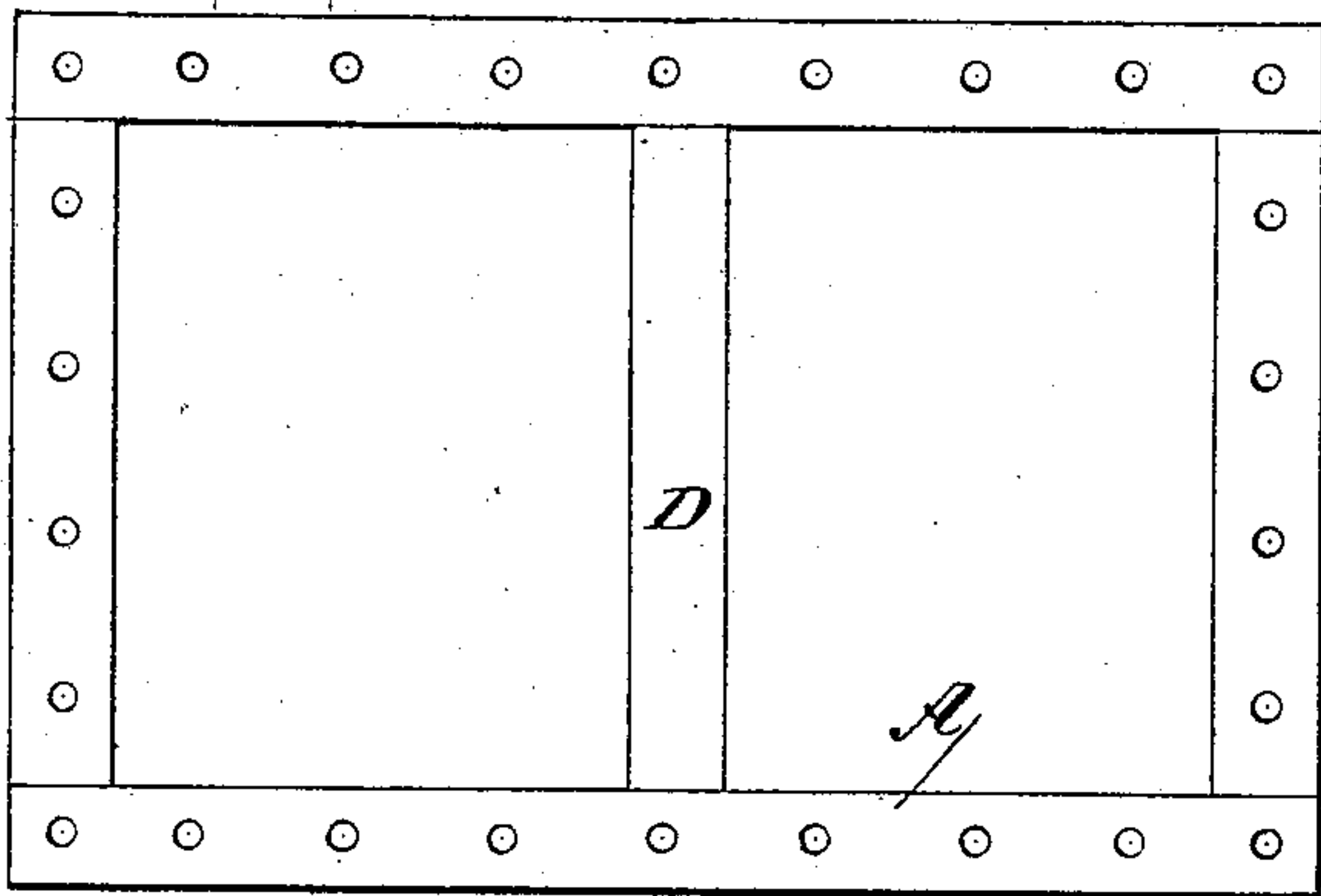


FIG 3

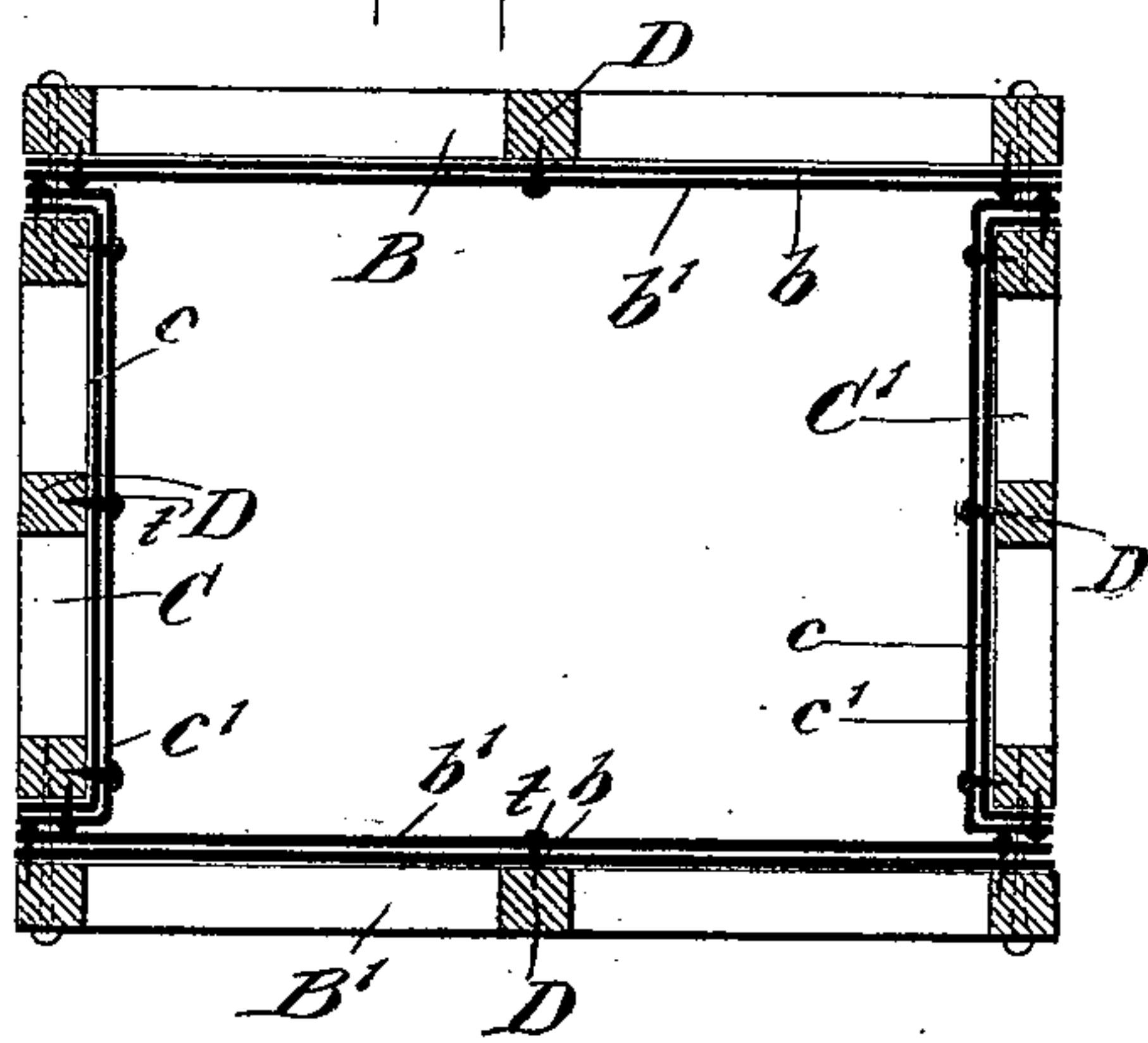
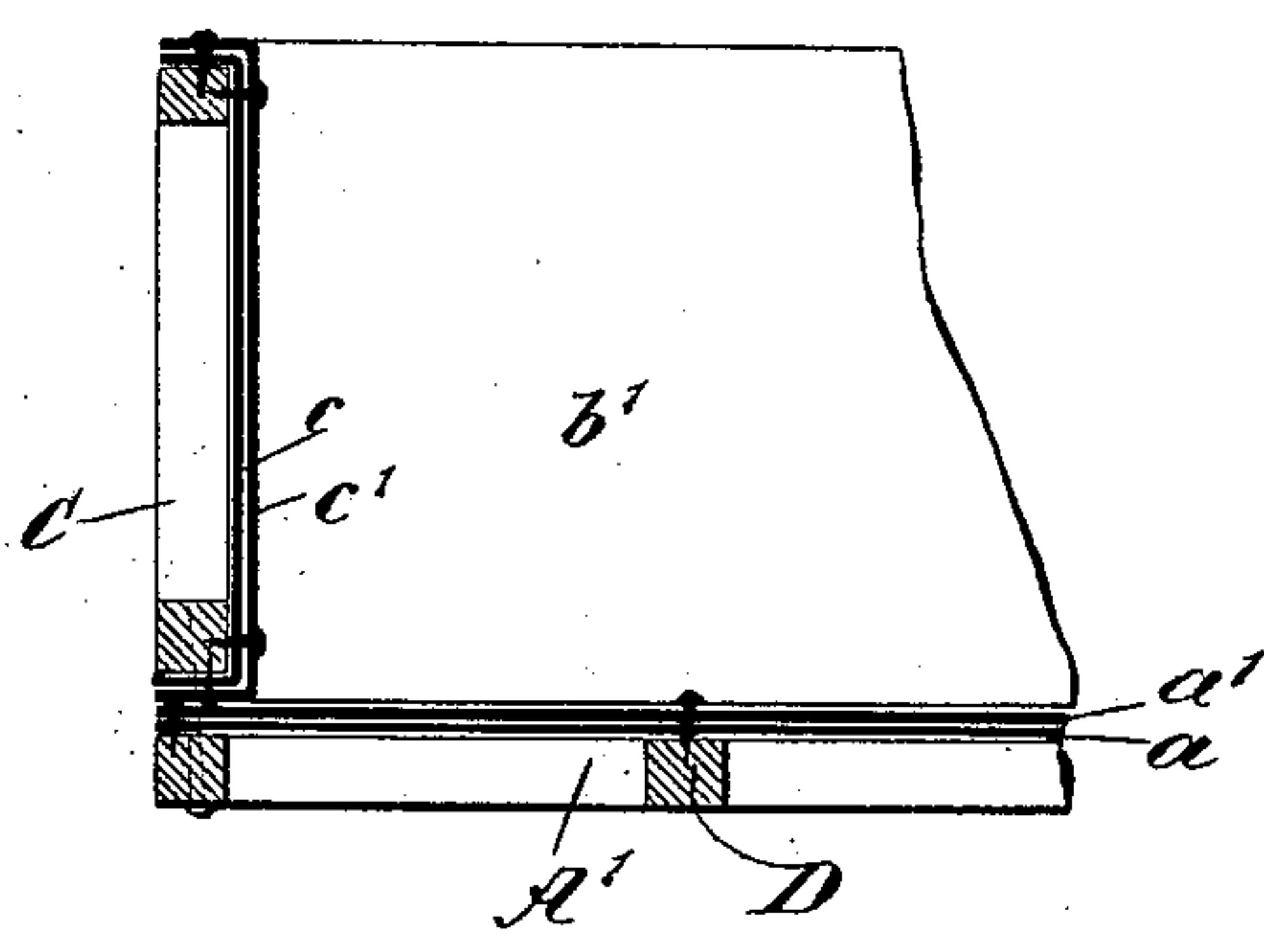


FIG 4



WITNESSES:

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PACKING-BOX.

SPECIFICATION forming part of Letters Patent No. 620,054, dated February 21, 1899.

Application filed November 11, 1898. Serial No. 696,174. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. ROBBINS, of the city of New York, borough of Manhattan, county and State of New York, have invented new and useful Improvements in Packing-Boxes, of which the following is a full, clear, and exact description.

My invention relates to packing-boxes, and has for its object to provide a box of this character which will be light, strong, and impervious to water or dust.

The invention will be fully described hereinafter and the features of novelty pointed out in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an end elevation of the improved box with the cover lifted off. Fig. 2 is a plan view of the box. Fig. 3 is a sectional plan view on the line 3 3 in Fig. 1, and Fig. 4 is a partial sectional elevation on the line 4 4 of Fig. 1.

My improvements relate to that kind of packing-boxes in which each of the parts—that is, the top, bottom, sides, and ends—consist of a frame and a lining therefor, the frame being ordinarily made of wood and the lining of pulp. On account of its lightness and strength I prefer to use jute-pulp. In boxes of this character as heretofore constructed the connection of the lining with the frames has not been strong enough to meet all the requirements arising in practical use. It has therefore been the main object of my invention to secure a firmer connection between the frames and the lining, and, furthermore, it has been my aim to secure a tight joint between the several frames. As shown in the accompanying drawings, the top and bottom are constructed alike; further, the two sides are alike and the two ends are alike.

A and A' are the frames for the top and bottom, respectively, B and B' those for the sides, and C and C' those for the ends.

I generally arrange one or more cross-bars, such as D, in each of the frames, so as to strengthen such frame. The end frames are constructed so as to fit between the side frames, (see Fig. 1,) the height of the ends

and sides being the same. The top and the bottom frames A and A' have linings *a a'*, respectively, made of a material such as jute-pulp, said linings being of the same size as the frames—that is, the linings extend to the outer edges of the frames A and A' and form entirely plane surfaces. The side frames B and B' have linings *b b'*, which differ from the lining of the top and bottom in that their top and bottom edges are folded over and under the top and bottom members of the frames B and B'. The linings *c c'* of the ends C and C' have marginal portions folded over all four members or edges of the frames C and C'. It will therefore be seen that at each joint four thicknesses of pulp intervene between the frames and are clamped between them.

The nailing of the frames is made as indicated in the drawings. It will be seen that the linings *c c'* of the ends are held very strongly, inasmuch as any inward pressure on the outer faces of said linings is resisted by the clamping action exerted at the bent or folded marginal portions of said linings, and, further, the nails pass through said marginal portions and increase the rigidity and strength of the structure. It will be obvious that any water, rain, or dust reaching the box on the outside cannot pass into the interior thereof, for the reason that the bent or folded edges of the linings form angles checking the passage of such foreign matter, and the passage of rain or dust through the joints between the frames is made practically impossible by the interposition of four layers or thicknesses of pulp between the frames at each joint. The very strong connection afforded by the bent edges of the linings enables me to use comparatively thin pulp, and thus to obtain a very light box without sacrificing any strength.

In the drawings I have shown each of the open frames provided with a double lining. By this construction I secure a box of exceedingly great water-tight qualities, as the two layers of the lining being merely placed close together without any connection except where they are nailed together at their edges a small air-space will be formed between the two layers, and this space will form an effective check against the passage of mois-

ture from the outer layer of the lining to the inner layer thereof, for any water passing to the inner face of the outer layer will not immediately come in contact with the outer face of the inner layer, but will spread on the inner surface of the outer layer and will not reach the inner layer until a sufficient amount of moisture has collected on the inner face of the outer layer to fill or bridge the air-space.

Of course instead of a double lining I might employ one of three or four layers, but in most cases two layers will suffice. It will also be understood that although I prefer to employ a plurality of layers as a lining for each part of the box, so as to secure the above-described advantage arising from the formation of an air-space between the layers, yet in some cases I may use a single lining only for each frame, and a box so constructed while not water-tight to the same degree as the one shown in the drawings will still be water-tight enough for many purposes and will, besides, possess the same advantages of strength and lightness as the construction shown.

It will be understood that the lining I employ has a large part of its surface exposed, said exposed surface forming the outer surface of the box. The lining therefore must be strong enough to resist the shocks and strains to which the box is subjected in the ordinary handling of it. This strength I secure by the particular connection of the bent edges or flanges, as hereinbefore described. I am thus enabled to produce a box which is light in itself, yet capable of being used not only for carrying light goods, but heavy goods as well.

The increase in water-tightness obtained by the use of the double lining with the intervening small air-space is quite remarkable. In a comparative test I poured a certain quantity of water on the outside of a box constructed as shown in the drawings and the same quantity on a like place of one of the best lined boxes in the market. The time required for the moisture to penetrate through the lining was about one minute for the box used for comparison and twenty-four minutes for the box having a double lining, according to my invention, although the said lining consisted of ordinary jute-pulp. It will therefore be seen that a box constructed according to my invention possesses to an eminent degree the three features of lightness, strength, and impermeability.

In constructing boxes according to my invention I first make the open frames A A' B B' C C'. Then, laying a frame down upon a table or other suitable support, I place the lining on top of the frame and secure it by tacks to the bars of the frame and also by one or more tacks to the cross-bars, such as D, if such bars are used. This will complete the frames A' A for the top and bottom. For the frames of the sides and ends the lining projects beyond the frame-bars, as described.

These frames, after tacking the lining thereon, as described, I turn upside down, so that the lining will be upon the table, and then with a knife or other sharp instrument I score the projecting portion of the lining along the edges of the frames, so as to facilitate the bending of said projecting portions. These portions I then fold upward against the outside of the frame-bars and tack them thereto, thereby forming panels, which are ready to be set together to form a box either at the factory or by the consumer. The tacks hereinbefore referred to are designated upon the drawings by the letter *t*.

It will be understood that the layers of the lining are in close contact with each other at the points where they are held to each other and to the frame-bars by the tacks *t*, and at all other places the linings are but slightly separated from each other, as two sheets of pulp tacked together along certain lines and otherwise unconnected will naturally be. For the sake of clearness, however, I have in the drawings exaggerated the distance separating the layers of the lining; also, I have shown the linings out of contact with each other even where they are held together by the tacks.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A packing-box, the same consisting of open frames forming the top, bottom, sides and ends of the box, and linings secured upon the inner faces of the said frames, and having portions exposed through the openings of the frames, sundry of said linings having their edges bent around members of said frames so as to be clamped between two frames, substantially as described.

2. A packing-box, comprising open frames forming the top, bottom, sides and ends of the box, and linings secured to the inner surfaces of the said frames, and having portions exposed through the openings of the frames, the linings of the top and bottom frames extending flush with the outer edges of the said frames, while the linings of the sides extend flush with the vertical members of the said side frames and are bent over and under the top and bottom members of the said frames, the linings of the ends being extended and bent over the top, bottom and side members of the end frames, whereby two linings will be in contact with each other at each joint, substantially as described.

3. A packing-box, comprising open frames forming the top, bottom, sides and ends of the box, and linings secured to the inner surfaces of the said frames, and having portions exposed through the openings of the frames, the linings of the top and bottom frames extending flush with the outer edges of the said frames, while the linings of the sides extend flush with the vertical members of the said side frames and are bent over and under the

top and bottom members of the said frames, the linings of the ends being extended and bent over the top, bottom and side members of the end frames, whereby two linings will
5 be in contact with each other at each joint, each of said linings consisting of a plurality of layers placed together loosely so as to form an air-space between them, substantially as and for the purpose set forth.

CHARLES A. ROBBINS.

Witnesses:

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